

REMARKS

In order to clearly distinguish the present invention over the cited prior art, the original set of claims has been completely revised in order to put much more emphasis on the original features of the present invention.

As may be noticed, claim 1 has been amended in order to make it clear that the insulating material according to the invention consists essentially of the very specific components disclosed and exemplified in the specification. The use of the expression "consists essentially of" in the preamble of this claim makes it clear that the insulating material does not and cannot contain any other components.

As the definition of the components, it may also be noticed that the fly-ash is now exclusively restricted to cenospheres, which are disclosed on page 3, lines 11 to 15 of the specification, as being ceramic hollow microspheres which basically consists of silica and alumina.

The heat sensitive binder has also been restricted to those specifically disclosed as being known to have a low sintering temperature, namely boric acid and anhydrous boric oxide. Such indeed is an essential feature of the invention to insure that the insulating material has a setting temperature lower than 400°F.

The non-wetting agent has also been restricted to calcium fluoride, magnesium fluoride and barium sulphate. These compounds are indeed the most interesting non-wetting agents available.

The heat expandable material has been restricted to vermiculite and graphite.

In view of this restriction made to the definition of the components of the invention, it has now been specified in the preamble of the same that the insulating material according to the invention has a thermal conductivity ranging between about 0.1 and about 1.8 BTU-in/F-h-pi². A support for this particular range can be found in the third column of the Table entitled "Thermal conductivity" appearing at the bottom of page 5 of the specification.

Of course, in view of the restriction made to claim 1, claims 2 and 4 have been cancelled.

As correctly mentioned by the Examiner in the outstanding Office Action, US patent no. 6,458,732 to Doza et al. discloses a dry back-up insulating material which comprises:

- a filler light-weight material which may consist of expanded alumina silica hollow spheres, which can be considered to be similar to the cenosphere used as fly-ash in the material according to the invention, even though no mention is made to the size of such hollow spheres;
- optionally a heat activating bonding agent which consists of boron oxide of boric acid and therefore can be considered as an equivalent to the heat sensitive binder used in the material according to the invention.
- a matrix material which may consists of calcium fluoride, which may once again be considered as an equivalent to the non-wetting agent used in the insulating material according to the invention; and
- optionally, a dust suppressant which may consists of lightweight oil or kerosene.

The above patent Doza et al. however also discloses that the insulating material claimed therein must also comprise a dense refractory aggregate selected from a very specific group of compounds.

Nowhere in this patent it is disclosed that, when use is made of an insulating material of very specific formulation as now recited in amended claim 1 of the present application, one may obtain a dry back-up material which

- is free-flowing,
- has a low density as compared to the existing materials,
- has a low thermal conductivity as compared to the existing materials and,
- more importantly may sinter at a temperature lower than 400°F, as compared to 600°F and more with the existing materials.

Nowhere such is disclosed or suggested in Doza et al. which covers in a very broad manner a composition which encompasses thousands of components, in addition of disclosing as being essential fact that it must include a dense refractory aggregate selected from a very specific group consisting of once again numerous different compounds which are not present in the material according to the invention as now claimed.

The two other references that were made of record discloses as it is of common practice, to use non-wetting agents in the preparation of dry materials for using metallurgical applications. However, none of these other references disclose a very specific free-flowing, dry back-up material as is now being claimed, which material is restricted to a very specific formula which has proved, as reported by the test made by the Applicant and given in the specification, to be particularly efficient and advantageous thanks to its free-flowing property.

For the above-mentioned reasons, and in view of the amendment made to the claims, it is believed that the present invention as now claimed qualifies as an "invention of selection" and should be considered as patentable since none of the prior art references discloses or suggest the present invention and the advantages that have been found to it.

In view of the above Amendment and remarks, favourable reconsideration is therefore earnestly solicited.

RESPECTFULLY SUBMITTED



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